

# 2011 SNAPSHOT ON EUROPEAN WIND ENERGY

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In 2010 39.4 GW [1] of new wind turbine capacity were installed bringing the world wide total installed wind capacity to almost 200 GW (Fig. 1). The total value of new generation equipment installed in 2010 is estimated to be about €40 billion [2]. China moved to the first place (44.7 GW), followed by the United States (40.2 GW), Germany (27.2 GW), Spain (20.7 GW) and India (13.1 GW). With almost 19 GW of new installations, China had about 50% market share of new installations. The total installed wind capacity at the end of 2010 can produce about 440 TWh of electricity or about 2.2% of the global electricity demand.

The European Union Member States added 9,259 MW and reached a total installed capacity of 84,074 MW [3]. Other European countries and Turkey added 624 MW, bringing the total wind installations in Europe and Turkey to 86,075 MW.

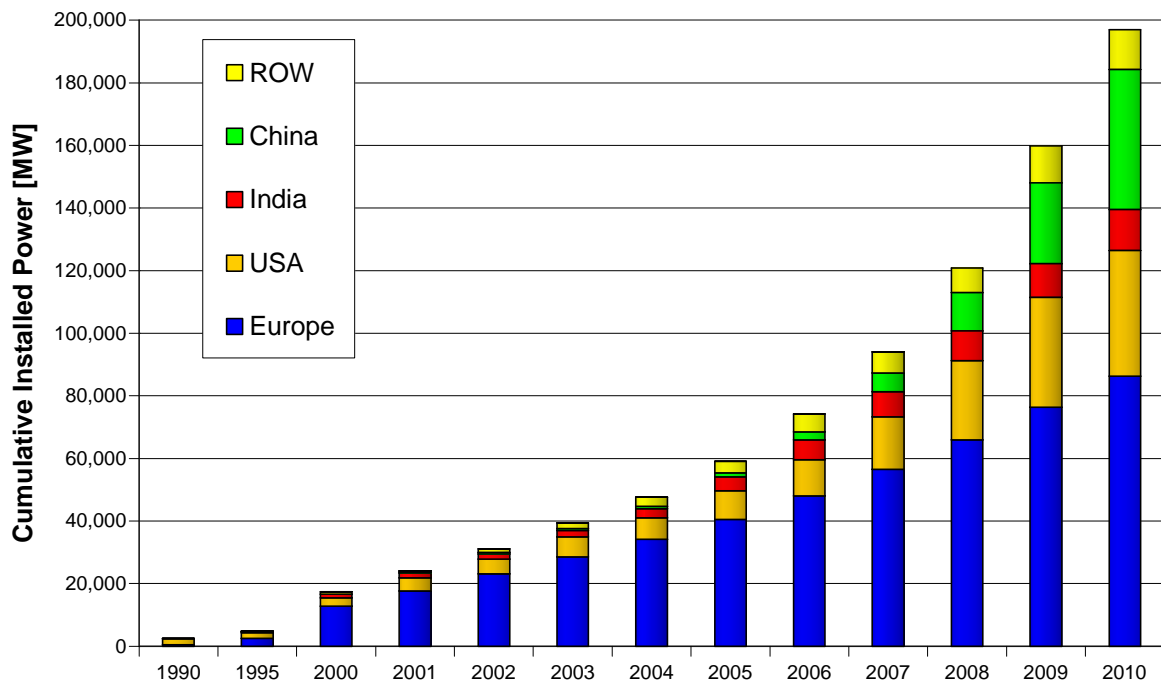


Figure 1: Cumulative world-wide installed Wind Power capacity from 1990 to 2010  
Data Source: BTM, EWEA, GWEC, WWEA [1, 2, 3, 4]

Six countries added capacities of more than 1 GW in 2010: China (18.9 GW), United States of America (5.1 GW), India (2.1 GW), Germany (1,551 MW), Spain (1,527 MW) and France (1,086 MW). Another five countries added 500 MW or more: United Kingdom (962 MW)

Italy (950 MW), Canada (690 MW), Sweden (604 MW), Romania (577 MW) and Turkey (528 MW).

After an almost even distribution of market shares amongst Europe, North America and Asia in 2009, Asia dominated the installations with almost 54% in 2010, whereas the North American share sharply declined to 15% leaving Europe with 25%.

In 2010, the European Union's wind capacity grew by 12.2 %, well below the global average of 24.8%. The total capacity of 84 GW is equal to 10% of the total European electricity generation capacity and is capable to produce about 185 TWh of electricity or roughly 6% of the European electricity consumption. The German and Spanish markets each still represent 16% of the EU market, but France (12%), the United Kingdom (10%) and Italy (10%) are catching up.

The general trend shows that the wind energy sector is broadening its market base and more and more countries are increasing the installation of wind energy capacities. In 2010 a total of 83 countries used wind energy on a commercial basis and 50 out of them increased their installations in that year. The European market accounted for about 25% of the total new capacity, a significant percentage decrease from the 75% in 2004.

In 2010 offshore wind capacity increased more than twice the rate of onshore installations with 59.4%. However this high growth rate was from a low basis and the added offshore capacity of 1.16 GW brought the total offshore capacity to 3.1 GW or 1.6% of the total wind capacity worldwide.

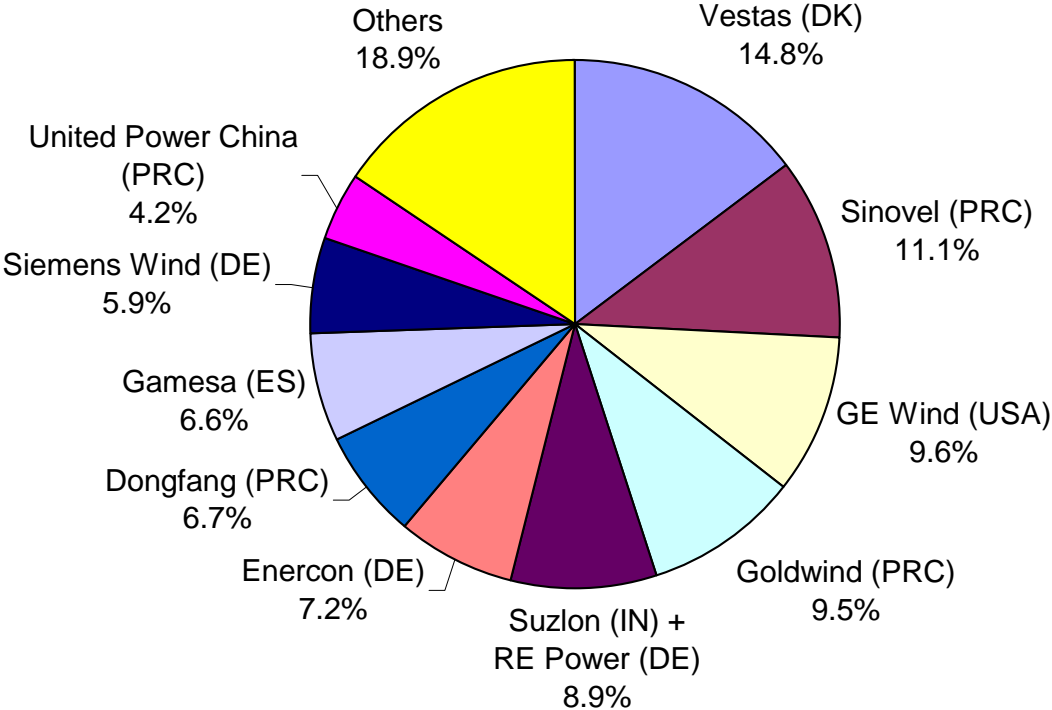


Figure 2: Market shares of manufacturers 2010 (39.4 GW installations) [1] (The total is more than 100% due to the difference between supplied and installed turbines)

Market shares of manufacturers published by *MAKE consulting* and *BTM Consult* showed that Denmark's Vestas continued to defend its top manufacturing position, followed by Sinovel and Goldwind from China and GE Wind from the USA. 4 of the top 10 wind turbine manufacturers are from the People's Republic of China and there are more than 100 companies involved in wind equipment manufacturing [1, 5, 6, 7].

It should be noted, that the two consulting companies differ most in the market share of Vestas, which is given with 14.8% from BTM and 12 from MAKE.

So far most of the Chinese wind turbines are only sold in China, but a number of players have already announced to expand outside China in the future partly because of overcapacity and fierce competition within the domestic market. Chinese companies were highly present at the recent European wind industry fairs of Husum 2010 and EWEA 2011, and some have even established a European office, e.g. Sinovel in Madrid. It is obvious, that the vision of the Chinese wind turbine manufacturers is not limited to sell wind turbines overseas, but to establish manufacturing strongholds in the big markets and offer wind farm financing and operation. This strategy is backed by the Chinese government in order to accelerate the maturing of the domestic industry.

Despite a record capacity of 44.7 GW, China is still facing a severe connection problem. The State Grid Cooperation of China (SGCC) estimates that by the end of 2010, that wind farms with about 15 GW capacity were not connected to the national grid [8]. In 2010, coal accounted for 67.6 percent of the country's power, about 30 percent higher than the world average. Wind power accounted for just 1.1 percent of China's electricity. At the end of 2009 the Chinese Renewable Energy Law from 2006 was amended and the renewable energy target for 2020 was increased from the previous 9% to 15%. The 30 MW wind target for 2020, set in 2006, was surpassed in 2010 and the Chinese State Grid Corporation released a white paper in 2011 which states: "China's accommodated wind power will exceed 90 GW in 2015 and 150 GW in 2020" [8]. Analysts like Morgan Stanley are even more ambitious and predict that China will increase its wind power capacity to 300 GW by 2020 [7].

In 2009 the European Wind Energy Association (EWEA) increased its 2020 target from 180 GW installed capacity in 2020 to 230 GW including 40 GW offshore. This cumulative installed capacity would be able to produce some 600 TWh of electricity or 14 to 18% of the European Union's expected electricity demand in 2020.

On a world wide scale, the World Wind Energy Association (WWEA) is forecasting on the basis of the current growth rates and the increased risk awareness of fossil fuel supply and nuclear power plants an installed wind capacity of 600 GW by 2015 and 1,500 GW by 2020.

According to the WWEA, the sector provided 670,000 direct and indirect jobs at the end of 2010 and has more than tripled its employment figures within the last five years. In 2012 the Association expects that the wind industry will provide more than 1 million jobs world wide.

### Important!

- 1) In Europe, the potential annual average electricity production of wind turbines with a nominal capacity of 1,000 MW is 2.2 TWh. This means that the cumulative installed capacity in EU-27 by the end of in 2010 (84 GW) could deliver about 185 TWh of electricity in an average wind year, roughly 6% of the EU-27 electricity consumption. However, real production depends on the annual wind conditions and can vary by at least  $\pm 10\%$ .

### References:

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